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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,516	02/05/2004	Frederick M. Mako	MAKO-12 CONT	6541

7590 03/07/2005

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EXAMINER

MAYES, MELVIN C

ART UNIT PAPER NUMBER

1734

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,516

Applicant(s)

MAKO ET AL.

Examiner

Melvin Curtis Mayes

Art Unit

1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

(1)

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

(2)

Claim 9 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for applying slurry to first and second bodies of **ceramic**, does not reasonably provide enablement for applying slurry to first and second bodies . The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

According to the specification, the invention is related to joining bodies of ceramic, such as silicon carbide. The specification does not support the broader claim of first “body” and second “body” which encompasses materials beyond ceramics, such as metals, polymers or composites. The specification is only enabling for bodies of “ceramic” and Claim 9 should be amended as such.

Claim Rejections - 35 USC § 102 and 103

(3)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(4)

Claim 9 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kellar 3,657,592.

Kellar discloses a method of joining sections of electrode comprising: providing the sections with 45° conical end faces; applying a cement to the end faces; assembling the end faces; and heating to above 1000°C (col. 2-6).

Further by applying the cement to 45° conical end faces, the cement (slurry) is obviously applied to tapered areas of sections, as claimed.

(5)

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over DE 26 04 171 in view of Barton et al. 6,214,472.

DE 26 04 171 discloses a method of making a turbine rotor disc comprising: providing a silicon carbide hub and disc, each with tapered surface; applying a heat resisting cement to the tapered surfaces of the hub and disc; and bonding the hub and disc (Abstract and oral translation).

Barton et al. teach that ceramic materials can be joined at relatively low temperatures using a bonding agent of preceramic precursor which is heated to temperature not exceeding 1200°C to pyrolyze the preceramic polymer so as to form a strong and tough bond joint. The

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bonding agent is paste that can be readily applied to the surfaces to be bonded (col. 2, lines 25-44, col. 5, lines 15-18).

It would have been obvious to one of ordinary skill in the art to have modified the method of DE '171 for bonding tapered silicon carbide hub and disc by applying a slurry of a preceramic polymer to the tapered surfaces to be bonded and heating at up to 1200°C, as taught by Barton et al., to join ceramic materials at relatively low temperature.

(6)

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coes 4,070,197 in view of Mizuhara 4,783,229 and Ewart-Paine 5,407,504.

Coes discloses a method of making a silicon carbide body comprising: providing two silicon carbide tubular sections; coating the mating surfaces of the two sections with a layer of slip used for casting the two pieces; holding the mating surfaces together; and firing to recrystallize the silicon carbide. Coes discloses using a slip having a bimodal mixture of silicon carbide powder having two separate groups of particle size, one being between 50 and 150 microns and the other being on the order of 3 to 5 microns (col. 1, line 55 – col. 3, line 32). Coes does not disclose that the mating surfaces to be coated and joined are tapered or disclose heating in the range of 850-1400°C.

Mizuhara teaches that in joining two ceramic tubes by a joining compound to make a longer tube, the ends of the tubes are ground to a taper that mates with each other to increase the length of the contact and thereby considerably strengthening the joint (col. 1, lines 16-47).

Ewart-Paine teaches that densified bodies of ceramic such as silicon carbide can be joined at lower temperatures compared to other silicon carbide joining methods by pyrolysis of a

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preceramic polymer, such as polycarbosilane, which convert to a ceramic material at temperatures as low as 1000°C.

It would have been obvious to one of ordinary skill in the art to have modified the method of Coes for joining two silicon carbide tubular sections by providing the ends to be coated and joined as tapered, as taught by Mizuhara, to increase the length of contact of the ends to be joined, thereby considerably strengthening the joint.

It would have been obvious to one of ordinary skill in the art to have further modified the method of Coes by providing the slip with a preceramic polymer, as taught by Ewart-Paine, to join the silicon carbide sections at temperatures as low as 1000°C. by pyrolysis of the preceramic polymer.

Conclusion

(7)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(8)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

(9)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
March 4, 2005